Defense Production Act Title III

2008

Changing the Industrial Base to Defend the Nation

Title III At A Glance

Production Capabilities for the Warfighter

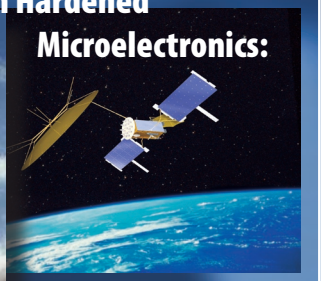
Scope

- Provides financial incentives to domestic firms to make investments in production capabilities for critical security needs
- Stimulates investment in key production resources to:
  - Create, expand, modernize or maintain supply, improve quality, and reduce cost of advanced materials and technologies;
  - Strengthen economic and technological competitiveness of U.S. industrial base; and
  - Accelerate transfer & insertion of advanced technologies
- Executes projects ranging on a scale from process improvement to production plant construction

Program Measures & Metrics *(2002-2007)*

- $356 million appropriated (~$60M/year)
- $128 million high quality cost-share or other investments by Title III contractors leveraged with $107 million of government funding
- 27 projects now actively expanding production capacity for critical military technologies
- $34 million additional funding contributed since 2004 by Dept. of Energy, Navy, Army, MDA & others to enhance project activities
  - Lithium Ion Batteries for long-life space sytems
  - Silicon Carbide Wafers / MMIC Devices for high power & high frequency electronics throughout defense systems
  - YBCO Superconductors for small, very high power motors & generators; national power grid capacity growth
  - Thermal Batteries for missiles and artillery power systems

Radiation Hardened Microelectronics:



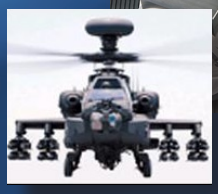
Accelerated defense production capabilities by two generations

ALON and Spinel Optical Ceramics:

Creating volume production of lightweight, multi-hit transparent armor for Warfighter protection, infared windows, and missile domes

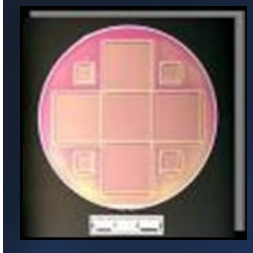
Beryllium Supply Initiative:

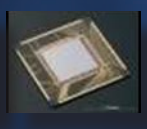
Rebuilding the nation's capability to produce defense-grade beryllium for guidance and surveillance systems



Rad Hard Read-Out ICs:

Expanding and improving capabilities for space-oriented optical surveillance and guidance systems





Silicon Carbide Monolithic Microwave ICs:

Establishing production capacity enabling unmatched performace, reduced system weight, and increased reliability at affordable prices

Welcome to the Defense Production Act Title III Program

The Title III Program – so-named because its major authorities and capabilities are identified in Title III of the Defense Production Act (DPA) of 1950 – plays a vital role in the creation of domestic production capabilities for a wide range of leading edge technologies necessary to strengthen our national security. The Program's mission is simple: to create, maintain, expand, or improve the production capabilities of domestic suppliers whose technologies and products are critical to the nation's security. The DPA Title III Program (usually referred to as "Title III") provides financial incentives to its industry partners to make investments in production capabilities. Specific incentives are developed on a case-by-case basis to directly target the most important elements of production as they relate to both the nation's needs and the company's business model.

Title III stimulates investment in key production resources to:

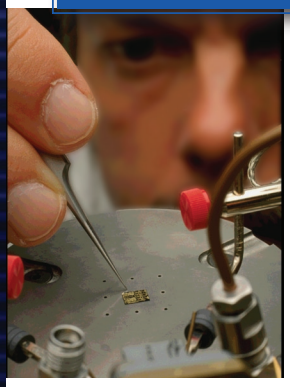
- Increase the supply, improve the quality, and reduce the cost of advanced materials and technologies;
- Reduce U.S. dependency on foreign sources of supply for critical materials and technologies; and
- Strengthen the economic and technological competitiveness of the U.S. defense industrial base.

Title III creates world-class production capabilities for leading edge technologies

Title III projects are undertaken to promote national defense capabilities and also help bolster the economic and technological competitiveness of the U.S. defense industrial base. A Title III project often addresses an area in which U.S. industry is lagging behind foreign competitors, or is at risk of surrendering technological leadership to these competitors.

In a broad sense, Title III projects have a great benefit on the affordability of military systems that use products manufactured by Title III contractors. Title III investments are directly focused on enhancing the viability of manufacturers, and a major element of viability is competitiveness with other global manufacturers. This competitiveness usually manifests itself in lower prices to customers, including the DoD.

What capabilities do Title III Projects enable?



Timely technology transitions are frequently achieved, benefiting military and commercial customers earlier than would otherwise be feasible. Without Title III incentives, suppliers often delay making investments in production scale-up until they have adequate, assured customer demand. Without adequate sales, the contractor will refrain from making any purchase of capital equipment or hiring additional production staff.

Title III also helps assure that a domestic source for a critical item is available to military customers. Since military customers rarely generate demand large enough to assure that a military-only producer can remain in business, Title III incentives are designed to support broad market development by its industry partners. This diversity of customers increases the likelihood that a supplier will remain competitive and economically viable.

How Can My Company Explore Title III Program Opportunities?

First, review this brochure to understand the nature of Title III projects and their direct applications to national security production capabilities. Title III is very focused on the business as well as the technical attributes of any potential project and the project's long term viability to assure the military's access to affordable products. If your company has a sufficiently mature technology in or nearing production, then Title III might be for you.

Second, visit the DPA Title III website for current information: *http://www.acq.osd.mil/ott/dpatitle3/*. The site can direct you to the Title III Program's Broad Area Announcement (BAA) that is used for solicitations for Title III projects. Besides giving you an opportunity to see what current solicitations ("Calls") are on-going, the BAA site will enable you to sign up for direct notifications of new Title III BAA Calls.

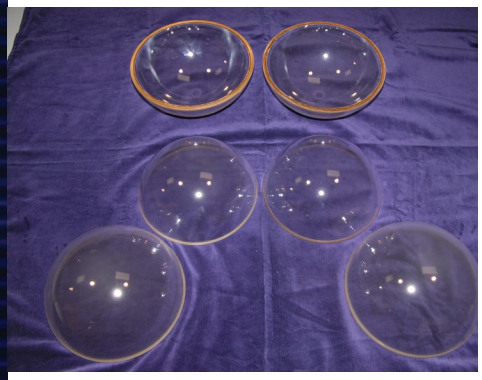
Next, watch for the announcement in January 2008 of the Title III Request For Information (RFI), to be published via the FedBizOpps website (*http://fedbizopps.gov/*). The DPA Title III Program Office conducts a periodic Title III RFI that provides industry the opportunity to identify critical technology transition/industrial base needs. These industry responses facilitate Title III discussions with Program Executive Officers/Program Managers (PEOs/PMs) with a stake in needed production capacity. In the RFI, the Air Force, as Executive Agent for the Defense Production Act (DPA) Title III Program, invites industry to provide information on potential topics for the DPA Title III Program. Industry responses to the RFI are then assessed and may assist in identifying potential future Title III actions (2008-2012). Responding to the RFI is not something to be considered lightly, as the information requested is detailed and lengthy.

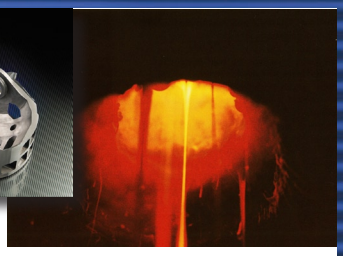
(Note: There is no guarantee that any submitted topic will become a Title III project, and responders to the RFI will have no competitive advantage in receiving awards related to the submitted topic area. The information submitted in all responses may be utilized to help the Government further define its requirements. If the Government develops a Title III project that addresses any submitted or similar topic, the resulting procurement will address technology and business specific requirements as defined by the Government to achieve Title III objectives.)

Finally, each year the DPA Title III Program participates at the Defense Manufacturing Conference, usually held in early December. There the Program has an exhibit, and many of the Title III contractors frequently have exhibits also. This provides the unique opportunity for one-on-one discussions with program officials and the Title III industry partners who can answer your questions about the Program and how it might work with you to address critical production capabilities for the United States. See the Title III website for updates about Title III at the Defense Manufacturing Conference.

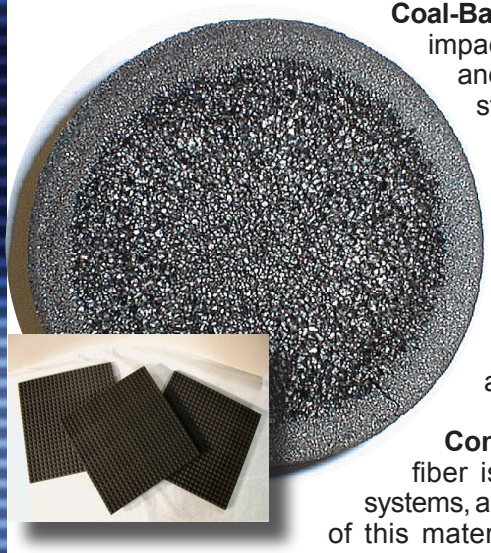
The Title III Project Portfolio

ALON and Spinel Optical Ceramics – Military weapon platforms such as the C-17 and High-Mobility Multipurpose Wheeled Vehicle (Humvee) require lighter weight, higher performance, and lower cost optical materials. Aluminum oxynitride (ALON™) and magnesium aluminate spinel (spinel) are extremely durable optical ceramics with excellent ballistic and transmission capabilities that are used in military applications for transparent armor, missile domes, and infrared windows. ALON™ and spinel components demonstrate optical, physical, and mechanical characteristics similar to today's standard sapphire, but with significantly lower cost. This is primarily due to the manufacturing process, which uses well-understood, conventional ceramic powder processing techniques. ALON™ optical ceramics are currently being utilized as a cost-effective alternative to sapphire for many infrared (IR) window and dome applications. This project will establish an integrated, flexible manufacturing process capable of producing these two extremely durable, transparent materials in the shapes and sizes required for aircraft transparencies, missile domes, reconnaissance windows, and transparent armor applications. Emphasis will be placed on increasing size, quality, yield, and affordability of both ALON and spinel, and on facilitating component evaluation, qualification, and insertion.

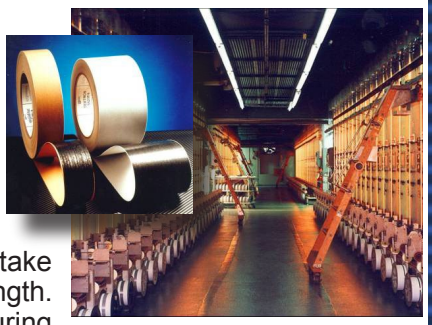




Beryllium Production – This project will overcome the lack of a continuing supply of primary (high purity) beryllium metal available to the United States and its allies for defense and critical civilian applications. The current supply of National Defense Stockpile beryllium ingots is in jeopardy of being depleted in the CY 2011 timeframe, when beryllium inventories are projected to be exhausted. Imports of beryllium (from Kazakhstan) cannot meet the purity levels required for many defense applications. Critical strategic applications, where there is no suitable substitute for beryllium, include: airborne forward looking infrared systems for fighter aircraft and attack helicopters; guidance systems on existing strategic missiles; surveillance satellites; missile defense systems; and numerous others. The project will ensure future supplies of high purity beryllium metal by establishing a new primary beryllium production facility through a cost share program with private industry.



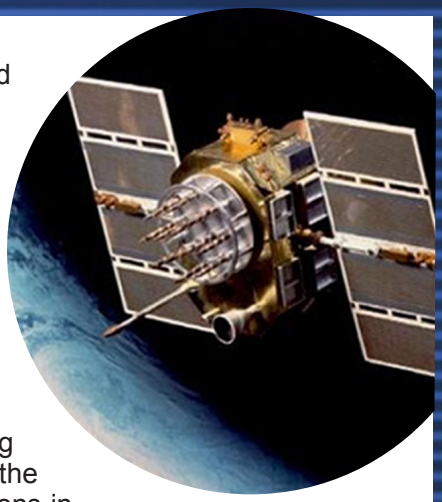
Coal-Based Carbon Foam – This material is an inexpensive, lightweight, fire-resistant, impact-absorbing material which can be fabricated in a variety of shapes, sizes and densities. It replaces conventional materials which are higher cost, lower structural capability, hazardous for fire, and heavier. Its electrical conductivity can be varied over nine orders of magnitude, and it has a low coefficient of thermal expansion. Carbon foam's applications include replacing components in naval ship exhaust and ventilation systems and rapid development of manufacturing tooling. It exhibits similar properties as other materials at a lower cost, and outperforms other products at noise reduction, fire resistance, impact resistance, energy absorption and thermal properties. This Title III project will expand the domestic production capability for coal-based carbon foam to meet DoD needs for blast mitigation, hot structure applications and for low-cost tooling.



Continuous Filament Boron Fiber – Boron fiber is a critical material for several defense systems, and there is only one small domestic producer of this material. Preventing material shortages and mitigating potential risks of escalating production costs through optimal production rates is the objective of this Title III project. Boron fiber is needed to support current and future military requirements for aircraft structure reinforcement and repair. Also, several emerging applications may be able to take advantage of this unique material, which has high compressive stiffness and strength. This project is focusing on leveraging mature, proven commercial manufacturing processes to produce boron fiber of high quality, adequate volume, and at a reduced cost for DoD applications.

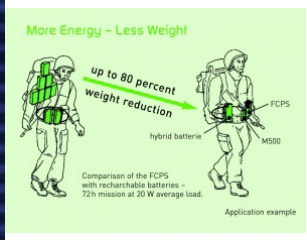
Flexible Aerogel Materials Supplier Initiative – This project is establishing affordable production by a domestic supplier of flexible aerogel materials. Aerogels are nanoporous solids with up to 99% open porosity often called "frozen smoke." The nano-scale lattice and pores provide high performance with minimal weight and space. Military applications are expected for high temperature thermal insulation, acoustic protection, infrared suppression and energy absorption. Many commercial applications for these same qualities are expected at lower temperatures. The project involves testing and qualification of the materials for potential applications and, eventually, a full scale, high volume production capacity.

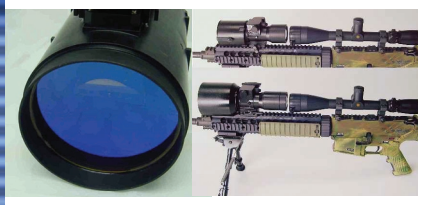
Integrated Advanced Composite Fiber Placement – Current process/production rates for large aerospace composite products are slow and time consuming in comparison to expected demand. Significant aerospace industry growth and inadequate manufacturing capabilities could jeopardize the assembly demands required by the Department of Defense. This Title III project will expand the domestic supply base for automated composite technologies, maximize processing/cost benefit ratios, and provide cost efficient fiber placement composite processing technologies for military and commercial aircraft structures. The project aims to increase commercially viable production efficiency and make the process enhancements generally available to the commercial composite production market.



Lithium Ion Battery Production – This project will establish a US-owned domestic source of high reliability, long-life lithium ion batteries for spacecraft use. Lithium Ion (Li-Ion) rechargeable battery technology provides higher power for longer durations with lower weight and favorable space constraints when compared to Nickel Cadmium or Nickel Hydrogen rechargeable batteries. The Li-Ion battery offers the highest energy/power package of the developed batteries today. This technology offers designers a weight saving option when compared to other battery types for overall weapon systems performance. Additional advantages include better recharging capability with no memory effect and broader temperature operating ranges.

Methanol Fuel Cell Components – As weaponry and armaments continue to become more sophisticated, employing larger quantities of power-consuming technology, soldiers are becoming overburdened by the need to carry more and more batteries. Military operations in Iraq and Afghanistan have highlighted the importance of reliable electrical power in mounted and dismounted soldier operations. Replacing batteries with methanol fuel cells as the power source of choice for the soldier has significant impacts on several key operations parameters. Unfortunately, due to low production volumes, manufacturing costs for methanol fuel cell membrane electrode assemblies remain high. This Title III project will develop low rate initial production capability, supporting increasing demand levels, and reducing cost through increased production efficiencies.





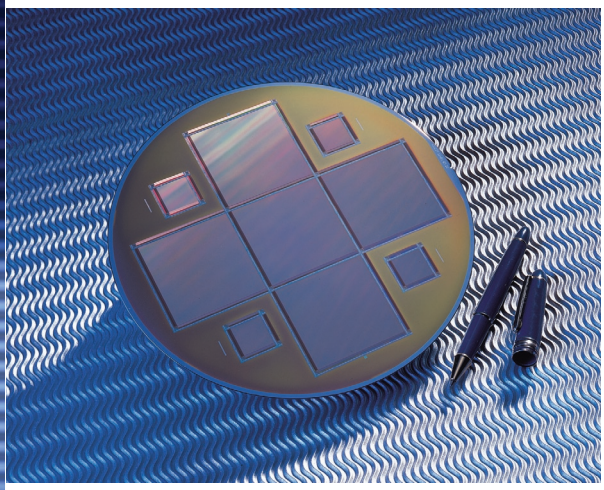
Military Lens System Fabrication & Assembly – The Title III Program is establishing a domestic capability for mono-spectral and advanced multi-spectral optical systems and lens components. It will develop a manufacturing capability for design, fabrication, finishing, coating, assembly, and testing of mono and multi-spectral night vision optical systems that can be integrated into military and commercial surveillance systems. Multi-spectral systems are shared-aperture systems that allow widely separated wavelength bands to be transmitted through a common aperture and share common elements in the optical train. They offer considerable advantages for the Warfighter including weight and volume reduction by allowing the Warfighter to carry fewer pieces of equipment, improved performance by allowing both bands to utilize the full aperture of the systems, and optimized system design for a larger set of operating conditions/environments.

Mini-Refrigerant Compressors for Man-Portable Cooling – This project is establishing a domestic low-volume production facility for mini-refrigerant vapor compressors. The Title III Program's industry partner recently purchased a production facility, and Title III is assisting this partner with plant facilitization, to include the purchase of manufacturing, assembly and test equipment. Applications for personal cooling systems encompass aircrew cooling; soldier cooling (both dismounted and within ground vehicles); and personal protective equipment cooling, such as Explosive Ordinance Disposal and Chem/Bio-Hazard suits. The compactness of these mini-compressors enables them to be installed within electronics cabinets to provide active cooling of components. This increases the performance, reliability, and life of mission-critical electronics systems in high temperature environments. In late 2007, industry will demonstrate a 10,000 unit per year production capacity and engage in continuous improvement and optimization of its production processes.

Photovoltaic (PV) Solar Cell Encapsulant – The objective of this Title III project is to expand the current domestic production capability for Photovoltaic Solar Cell Encapsulants. This material is used to protect delicate PV modules and solar cells from natural elements while also insulating the imbedded electrical circuits. There is insufficient domestic production capability for Ethylene Vinyl Acetate (EVA)-based PV solar cell encapsulant material to meet defense needs for military photovoltaic equipment applications.

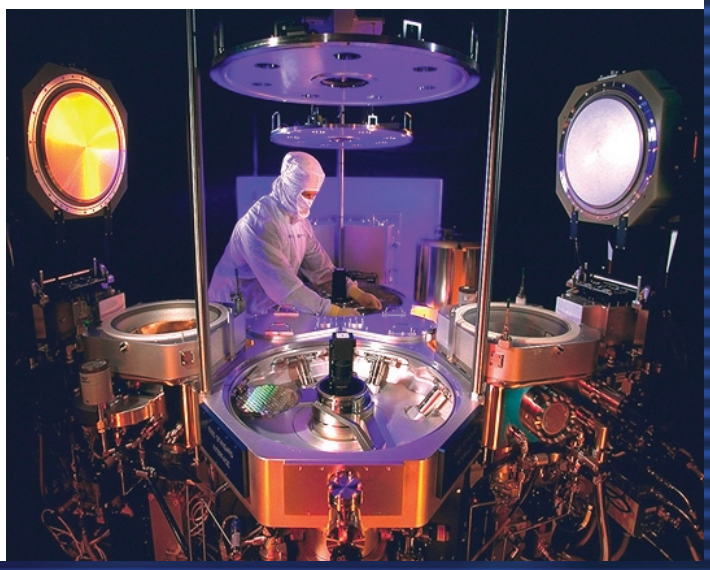
Key military applications using EVA-based encapsulant include portable power pack batteries, power for electronic and propulsion systems on high altitude airships and Unmanned Aerial Vehicles, power lighting and battery recharging shelters, and PV systems on military installations to reduce energy consumption. Industry's inability to scale up to required production levels has caused PV solar cell encapsulant material to be unavailable in quantities and sizes necessary to meet DoD requirements.

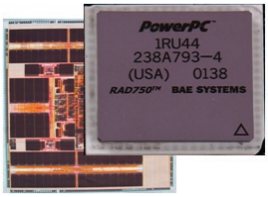
POSS™ Nanotechnology Project – This project is scaling up production of Polyhedral Oligomeric Silsesquioxanes (POSS™), a nano-sized material that, when used as a chemical additive, can greatly enhance the performance of polymers for a variety of DoD and commercial applications. POSS has been demonstrated as useful in applications such as radiation shielding for space-based microelectronics, coatings that prevent growth of tin whiskers on lead-free solder, photoresist material for semiconductor manufacturing, automotive fuel filters, food packaging, optical lenses, and aircraft tires.



Radiation Hardened Cryogenic Readout Integrated Circuits (ROICs) – This Title III project is establishing a viable, domestic foundry for commercial production of less than or equal to 0.35 micron, deep sub-micron Complementary Metal Oxide Semiconductor (CMOS) ROICs. Radiation hardened (RH) cryogenic microelectronics is a critical technology employed in the manufacture of focal plane arrays (FPAs) that are utilized in high altitude and space-based imaging and missile systems which must function in harsh natural or man-made radiation environments that are compounded by the cryogenic requirements of high altitude and space. RH cryogenic microelectronics process technology is used to manufacture read-out integrated circuits, which are integral components of FPAs. The next generation imaging requirements of high altitude and space-based weapon systems are dependant on the availability of advanced ROICs that provide high density with analog components, smaller pixels (increased resolution), increased functionality (on-chip processing), lower power dissipation, lower noise, larger focal plane arrays (stitching technology), and better producibility (yield). All these improvements will collectively increase the mission capability of the systems.

Radiation Hardened Electronics Capital Expansion – This project has made substantial capital investments as part of an OSD initiative, led by the Defense Threat Reduction Agency, to introduce a capability for production of 0.15 micron feature size devices (one generation behind current commercial state of the art) with strategic levels of radiation hardening, using commercially available microelectronics equipment modified for radiation hardened production. This capability will provide substantially higher electronic operating speeds and will lower the power/size of electronics in space craft. The smaller size and higher performance made possible by this Title III project will generate highly leveraged savings for spacecraft in terms of size, weight, reliability, and launch costs. Radiation hardened electronics enable spacecraft to operate in challenging radiation environments resulting from nuclear threats and exposure to long-term natural radiation. Several defense programs require strategic radiation hardened microelectronics. Without Title III support, these programs will have difficulty in achieving their goals and meeting insertion schedules.





Radiation Hardened Microprocessors – This Title III project is scaling up production capacities for high performance radiation hardened microprocessors with a progression from radiation tolerant to radiation hard. The much higher clock rates will lead to significant cost and weight savings for space systems. Higher performance means greater on-orbit processing capabilities and lower ground support requirements. As with the other Title III radiation hardening projects, these microprocessors will enable spacecraft to operate in the challenging radiation environments of nuclear threats and long-term natural radiation.

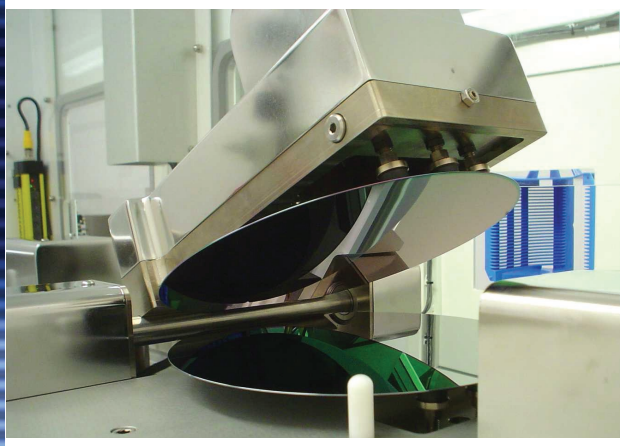
Reactive Plastic CO_2 Absorbent – This Title III project is increasing the domestic production capacity of Reactive Plastic Carbon Dioxide (CO_2) absorbent material. Reactive plastic CO_2 absorbent material is a technology that secures the CO_2 absorbing material to a plastic sheet in a polymer matrix bond. This material is a critical technology for national defense. It is utilized primarily in military scuba, submarines, space, and an array of homeland security applications to "clean" CO_2 from air needed for breathing. This technology is driven by the Navy, which seeks to utilize the advantages of reactive plastic CO_2 absorbent in rebreather gear. These advantages include stealth diving capabilities (i.e., no bubbles from the rebreather) with extended diving durations and reduced breathing effort by the divers. Other applications include medical, fire rescue, and mining operations where an inherently high risk of CO_2 contamination exists.

Rigid Polymer Materials – Title III has created a production capacity of polymers capable of strengths two times greater than most high performance thermoplastics. These materials offer tremendous benefits including higher strength structural foams and lightweight ammunition. Additionally, these materials possess lower moisture absorption than other foamed polymers currently being used for aircraft structures, thereby ensuring tighter tolerances can be maintained for better manufacturability. Other expected products include: mechanical components such as bearings and gears, optical coatings for goggles and aircraft windows, missile components, and ballistic armor components. These materials can be fabricated and machined using conventional automated methods. The project is focusing on cost reduction, the improvement and optimization of production processes and the testing and evaluation of the material.

Silicon Carbide MMIC Devices – This project is establishing a domestic supplier of low cost and high performance silicon carbide (SiC) metal semiconductor field effect transistor monolithic microwave integrated circuits (MMICs) that can satisfy military requirements for advanced radar systems. The project will also demonstrate improvements in the characteristics of 100mm SiC substrate and epitaxial materials and processes to enable high yield, high performance and reliable SiC MMICs that can be produced at an affordable cost. The project will develop and demonstrate substrates and epitaxial structures with defect densities commensurate with high yield production of high performance, reliable SiC MMICs.

Silicon Carbide Powder Production and Ceramic Armor Manufacturing – High purity silicon carbide (SiC) powder, specifically submicron alpha SiC powder, is a critical technology item for national defense. This refined form of SiC powder is the key ingredient required to produce high quality, light weight, and cost competitive SiC ceramic armor for the Warfighter. SiC ceramic armor military applications include body, vehicle, naval, and aircraft armor. Without access to submicron alpha SiC powder, production of high quality SiC ceramic armor would be unachievable. SiC ceramic armor is especially beneficial to applications that protect against higher ballistic threats. Primary applications include armor for land and air vehicles associated with the Future Combat Systems program, armor for naval ships, and lightweight armor for helicopters and other aircraft. This Title III project is increasing the domestic production capacity for both submicron alpha SiC powder and ceramic armor.

Thermal Battery Production – The objective of this Title III initiative is to establish, strengthen, and expand a domestic source for advanced thermal batteries. Military unique, high performance batteries are the only viable power source for many defense systems. The Missile Defense Agency and Service program offices have identified several high performance battery technologies for which there is insufficient availability or producibility to meet known and planned program requirements. These critical materials and technologies represent gaps that must be filled for the advanced systems to meet performance and production schedule goals. The DPA Title III Program is incentivizing a domestic company for production scale up and capacity expansion efforts. The applicability of these critical batteries to a wide variety of DoD weapons systems offers Army, Navy, and Air Force program offices the ability to greatly enhance system performance.

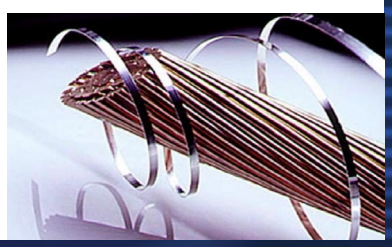


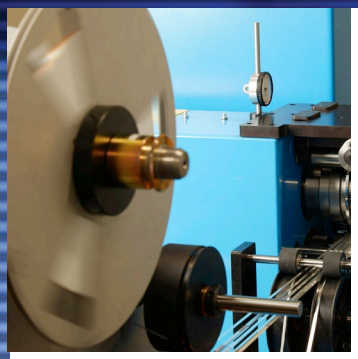
Thin SOI Wafers – This project is establishing a domestic full-scale production capability for thin silicon-on-insulator (SOI) wafers. Thin Film SOI electronic wafers are critical materials that enable the fabrication of radiation-hard, ultra large scale digital devices such as microprocessors, application-specific integrated circuits, and static random access memories. These radiation hard circuits fabricated with SOI materials are essential to defense systems, such as surveillance, communication and navigation satellites, ballistic missiles, surveillance systems, and inertial navigation systems. They provide a superior technology for sensitive ultra-low power space, and battery-powered applications due to reduced power requirements, increased device density, and faster device performance over circuits fabricated in bulk substrate technologies.

Titanium MMCs – Titanium Metal Matrix Composites (TiMMCs) are a critical technology item for national defense. TiMMCs offer material properties that enable aircraft designers to engineer components that are stronger, lighter, and more durable than existing steel and pure titanium components. These improvements can expand U.S. air superiority margins over opposition forces by increasing lethality for U.S. munitions, increasing survivability for the Warfighter, and ultimately increasing mission success rates. The desirable material properties offered by TiMMCs allow aircraft designers to utilize TiMMCs as the material of choice for components that require weight reduction, improved strength, and/or longer fatigue life. These properties will reduce product lifecycle costs and improve heat resistance characteristics. This Title III project is expanding the domestic production capacity of TiMMCs to support the Warfighter. Additionally, Title III funding will support the development of a database of TiMMC material characteristics and characterization of the production processes required to produce TiMMCs.

Traveling Wave Tube Amplifiers for Space – This Title III project is focusing on leveraging proven manufacturing processes to produce K-band Traveling Wave Tube Amplifiers (TWTAs) of high quality with improved manufacturing yield at reduced cost for DoD applications. A TWTA is a vacuum electronic device whose function is to amplify a radio-frequency signal. K-band TWTAs provide superior signal strength and larger bandwidth compared to today's satellite communications. Currently only a single foreign source for K-band TWTAs exists. Advancements in the domestic production capability for K-band TWTAs will support existing and future military and commercial requirements. DoD satellites using K-band TWTAs will support the growing need for real-time information and controls among deployed assets.

Yttrium Barium Copper Oxide (YBCO) High Temperature Superconductor – This Title III project is establishing large volume, high quality, domestic production capacity for second-generation High Temperature Superconductor (HTS) coated conductor. The conductor, based on YBCO material, is a higher-performance, lower-cost substitute for the first-generation HTS wire. Second-generation HTS coated conductor is the critical component for several defense applications which require high electrical power, principally Directed Energy Weapons (high power





microwaves and electrically driven lasers) and Electric Warships & Combat Vehicles programs. Components that will use HTS coated conductor include: gyrotron magnets, power generators, power converters and transformers, motors, primary power cabling, and magneto hydrodynamic magnets. Complete development of the technology will lead to transfer of the YBCO coated conductor into electric power applications such as transformers, transmission cables, motors, fault current limiters, and generators. The project will establish two domestic sources for YBCO coated conductor, making the benefits of second-generation HTS available 5-7 years earlier than might otherwise be feasible.

Program Management

The Office of the Secretary of Defense through the Deputy Under Secretary of Defense, Advanced Systems and Concepts, Office of Technology Transition, provides top-level management, direction, and oversight of the DPA Title III Program.

The Air Force serves as executive agent for the Title III Program within the DoD. The Title III Executive Agent Program Office, located at Wright-Patterson AFB, Ohio, is a component of the Manufacturing Technology Division, Materials and Manufacturing Directorate, Air Force Research Laboratory. The Program Office structures and executes approved and funded projects for the Department.

The Title III Program is an authority, not a direct source of funds. Projects are funded through relationships with programs of record with stakes in the needed production capacity. The project development process involves prioritization of the various project concepts, further development of the most-promising concepts, and final selection of the best concepts for funding.

Candidate projects are evaluated in terms of DPA criteria for Title III projects:

1. The industrial resource or critical technology item is essential to the national defense;
2. Without Presidential action under the Title III authority, United States industry cannot reasonably be expected to provide the capability for the needed industrial resource or critical technology item in a timely manner;
3. Title III incentives are the most cost-effective, expedient, and practical alternative methods for meeting the need; and
4. The combination of the United States national defense demand and foreseeable non-defense demand for the industrial resource or critical technology item is greater than the output of domestic industrial capability, as determined by the President, including the output to be established with the Title III incentives.

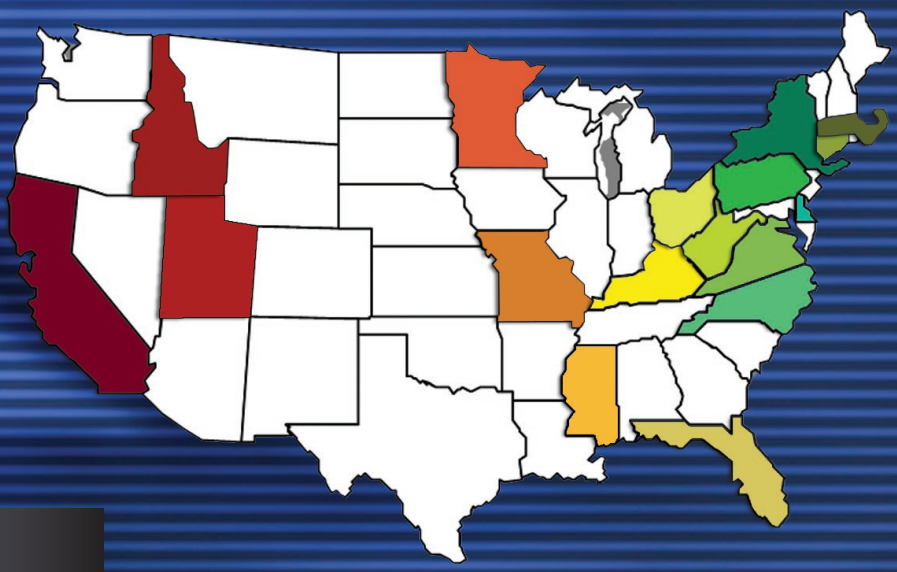
Contact Information

OSD
Title III Program Manager
DUSD (AS&C)
Office of Technology Transition
703-607-5314
ATLDPAT3@osd.mil

Air Force Executive Agent
Air Force DPA Title III Program Office
937-904-4382

Project/Title III Program Office Contacts	Project Contractor Contacts
ALON & Spinel Ceramics for Optics AFRL/RXME 937-904-4364	**Surmet Corporation** Burlington, MA 01803 781-345-5777
Beryllium Production AFRL/RXMP, 937-904-4389	**Brush Wellman, Inc.** Cleveland, OH 44110, 419-862-4180
Coal-Based Carbon Foam AFRL/RXME, 937-904-4373	**Touchstone Research Laboratory, Ltd.** Triadelphia, WV 26059 304-547-5800
Continuous Filament Boron Fiber ARFL/RXMP, 937-904-4380	**Specialty Materials** Lowell, MA 01851 978-322-1972
Flexible Aerogel Production Initiative AFRL/RXME, 937-904-4599	**Aspen Aerogels, Inc.** Northborough, MA 01532, 508-691-1112
Integrated Advanced Composite Fiber Placement AFRL/RXME, 937-255-0064	**ATK Space Systems, Inc.** Clearfield, UT 84016, 801-775-1280
Lithium Ion Battery AFRL/RXME 937-904-4373	**Quallion LLC** Sylmar, CA 91342, 818-833-2013
Methanol Fuel Cell Components AFRL/RXME, 937-904-4294	**DuPont Fuel Cells** Wilmington, DE 19880, 302-999-3354
Military Lenses AFRL/RXME 937-656-4168	**Optical Systems Technology, Inc.** Freeport, PA 16229, 724-295-2880, ext. 251
Mini-Compressors AFRL/RXME 937-904-4356	**Aspen Compressor, LLC.** Somerset, KY 42501 508-281-5322, ext. 229
Photovoltaic Solar Cell Encapsulant AFRL/RXME, 937-904-4355	**Specialized Technology Resources** Enfield, CT 06082, 860-749-8371
POSS Nanomaterials AFRL/RXME 937-904-4374	**Hybrid Plastics, Inc.** Hattiesburg, MS 39401, 601-544-3466
Radiation Hardened Capital Expansion (CAPEX) AFRL/RXME 937-255-3867	**BAE Systems** Manassas, VA 20110, 703-367-3478 **Honeywell** Plymouth, MN 55441, 763-954-2548
Radiation Hardened Cryogenic Readout ICs AFRL/RXME 937-656-4168	**AMI Semiconductor** Pocatello, ID 83201, 208-239-7083
Radiation Hardened Microprocessors AFRL/RXME 937-255-3867	**BAE Systems** Manassas, VA 20110, 703-367-2343
Reactive Plastic CO2 Absorbent AFRL/RXME 937-255-3867	**Micropore, Inc.** Newark, DE 19702, 302-731-4100 ext. 527
Rigid Polymer Materials AFRL/RXMP 937-904-4380	**Solvay Advanced Polymers, LLC** Bay St. Louis, MS 39520, 228-533-0825
Silicon Carbide MMIC Devices AFRL/RXME 937-904-4356	**Cree, Inc.** Durham, NC 27703, 919-313-5926
Slicon Carbide Powder Production & Ceramic Armor Manufacturing AFRL/RXMP 937-904-4385	**Superior Graphite** Hopkinsville, KY 42240 312-559-2999, ext. 2890
Thermal Battery Production AFRL/RXME 937-904-4294	**The Enser Corporation** Pinellas Park, FL 33781, 727-520-1393
Thin SOI Wafers AFRL/RXME 937-255-3867	**MEMC Electronic Materials, Inc.** St. Peters, MO 63376, 636-474-5585
Titanium Metal Matrix Composites for Aircraft AFRL/RXME, 937-904-4294	**FMW Composite Systems, Inc.** Bridgeport, WV 26330, 304-842-1970, ext. 144
Traveling Wave Tube Amplifiers for Space AFRL/RXME, 937-904-4366	**L-3 Electron Technologies, Inc.** Torrance, CA 90509 310-517-5494
Yttrium Barium Copper Oxide (YBCO) High Temperature Superconducters AFRL/RXME 937-904-4344	**American Superconductor** Westborough, MA 01581, 508-621-4234 **SuperPower, Inc.** Schenectady, NY 12304, 518-346-1414 x3097

Title III Team Member Locations



Quallion LLC
Sylmar, CA 91342

L-3 Electron Technologies, Inc.
Torrance, CA 90509

AMI Semiconductor
Pocatello, ID 83201

ATK Space Systems, Inc.
Clearfield, UT 84016

Honeywell
Plymouth, MN 55418

MEMC Electronic Materials, Inc.
St. Peters, MO 63376

Solvay Advanced Polymers , LLC
Bay St. Louis, MS 39520-9078

Hybrid Plastics, Inc.
Hattiesburg, MS 39401

The Enser Corporation
Pinellas Park, FL 33781

Aspen Compressor, LLC
Somerset, KY 42501

Superior Graphite
Hopkinsville, KY 42240

Brush Wellman, Inc.
Cleveland, OH 44110

FMW Composite Systems
Bridgeport, WV 26330-9687

Touchstone Research Laboratory, Ltd.
Triadelphia, WV 26059

BAE
Manassas, VA 20110

Cree, Inc.
Durham, NC 27703

Optical Systems Technology, Inc.
Freeport, PA 16229

DuPont Fuel Cells
Wilmington, DE 19880

Micropore, Inc.
Newark, DE 19702

SuperPower, Inc.
Schenectady, NY 12304

American Superconductor
Westborough, MA 01581

Aspen Aerogels, Inc.
Northborough, MA 01532

Speciatly Materials
Lowell, MA 01851

Surmet Corporation
Burlington, MA 01803

Specialized Technology Resources
Enfield, CT 06082